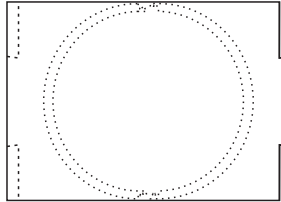


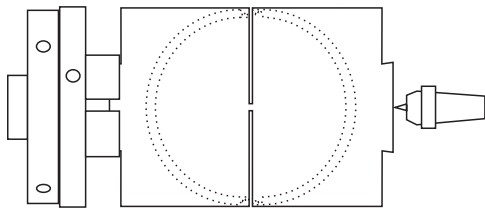
Threaded Spherical Box

As demonstrated by Neil Joynt

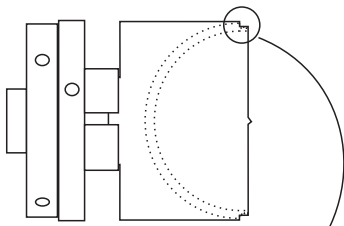
This plan is to make a spherical box of about 100mm outside diameter. You can choose any other size you wish.



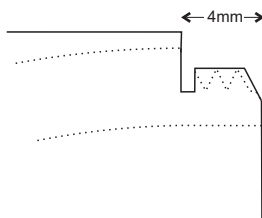
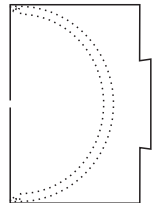
Start with wood 150mm long and 105mm square. The grain direction is along the long axis. Mark a centre point on both ends. Mount the wood between centres and cut a chuck bite (tenon, spigot) on one end.



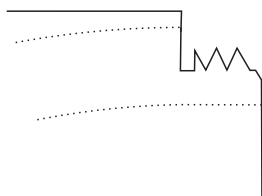
Mount the wood in a chuck. Bring the tailstock up to ensure that it is centred and secure. Round the block off (ideally to about 101mm dia). Cut a chuck bite in the tailstock end. Use a thin parting tool to cut the block in half. Set the tailstock end apart.



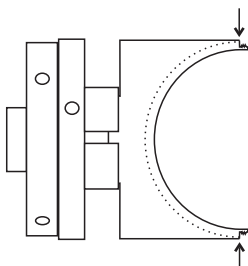
Dress the outer face of the exposed end. Make it perfectly flat so this face will later match perfectly at the threaded joint.



Prepare a place for the thread by cutting 4mm back from the parted face and 3mm in from the side. Cut a chamfer on the outer portion of the part to be threaded. This becomes a good lead in for the thread. Cut a relief area at the back of the part to be threaded.

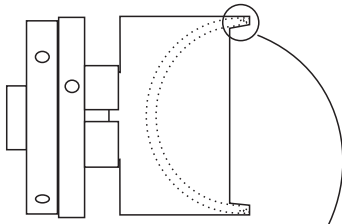


Keep the wood in the chuck and mount this on the thread-cutting jig. A 10 tpi thread is recommended. Cut the thread.

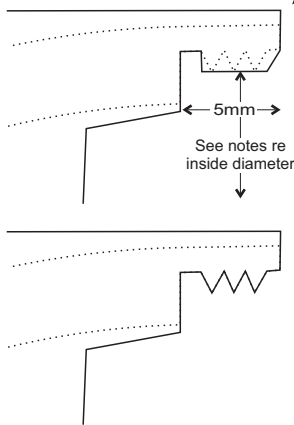
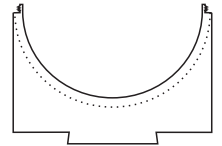


Now that the thread has been cut you can accurately determine the desired internal and external diameter of the box. Make a circle template for both inside and outside the box. Hollow the inside of this half of the box. Use the circle template to ensure a perfect curve and depth. Remember that the back of the thread (arrowed) is at the centre of the sphere. Sand and finish the inside. Set this part of the box aside.

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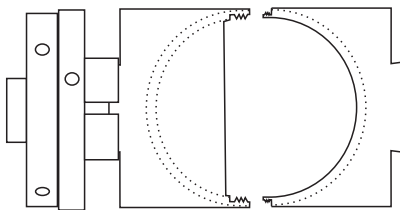


Remount the top part of the box that you set aside earlier. Dress the face to be perfectly flat. Cut into the face about 6 to 8mm and almost out to where the finished inside surface will be.

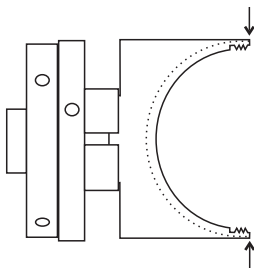


Prepare the inside of the sphere for the thread. Cut a chamfer on the outer portion of the part to be threaded. This becomes a good lead in for the thread. Cut a relief area at the back of the part to be threaded. Note that the inside diameter at the face where the thread is to be cut is 2.5 mm (if you are cutting a 10tpi thread) less than the outside diameter of the male thread.

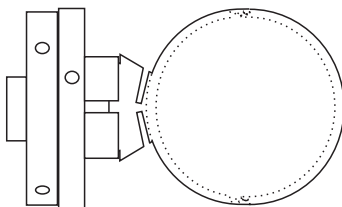
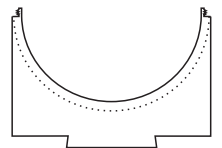
Keep the wood in the chuck and mount this on the thread-cutting jig. Cut the thread.



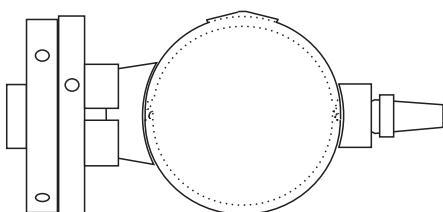
Test fit the two parts while the last-cut thread is still on the threading jig. When you are happy with the thread size return the part on the chuck, with its chuck, to the lathe. If there is grain to be matched cut the outer ends of the threaded part by tiny amounts until the two parts thread together with a good grain match. Set the top part of the box aside.



Hollow the inside of this half of the box. Use the circle template to ensure a perfect curve and depth. Remember that the front of the thread (arrowed) is at the centre of the sphere. Sand and finish the inside.



Put the two halves of the box together. Cut as much as possible of the outside. Use the circle template to ensure roundness and to get the desired wall thickness. Sand the outside to almost finished. Part the box off but be a little bit generous with the amount of wood you leave on the spherical box.



Rotate the sphere 90° and hold it between shaped blocks or in a ball chuck. Remove the last of the parting-off wood. Sand and finish all surfaces. Add decoration of your choice.

